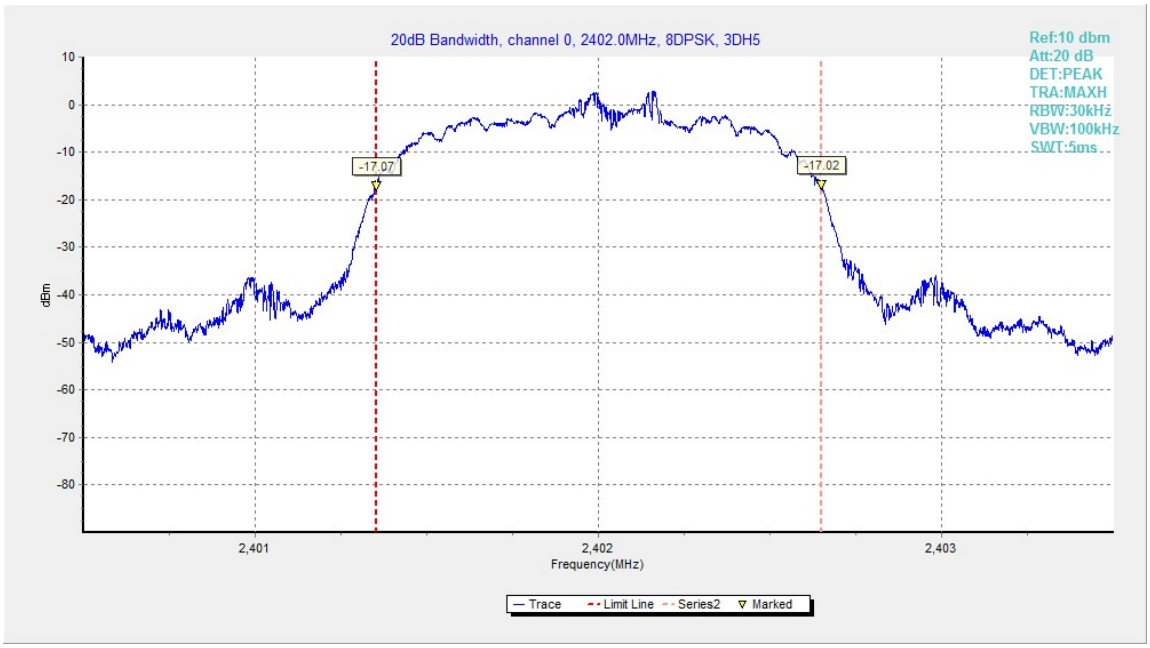


Fig.104. 20dB Bandwidth: 8DPSK, Channel 0

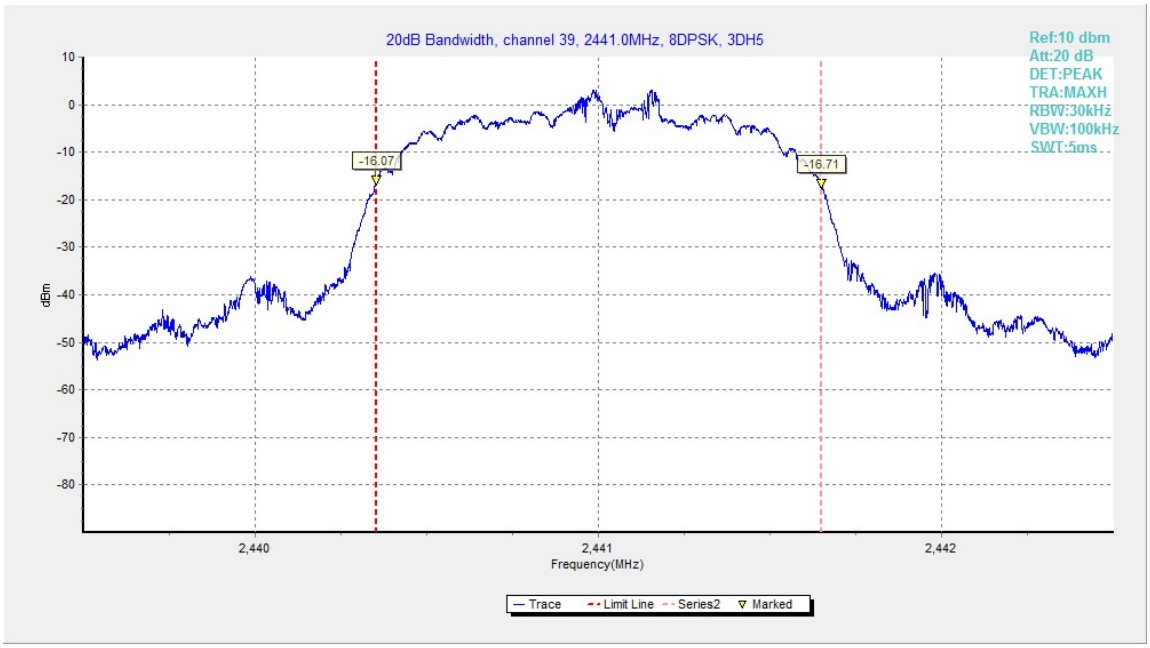


Fig.105. 20dB Bandwidth: 8DPSK, Channel 39

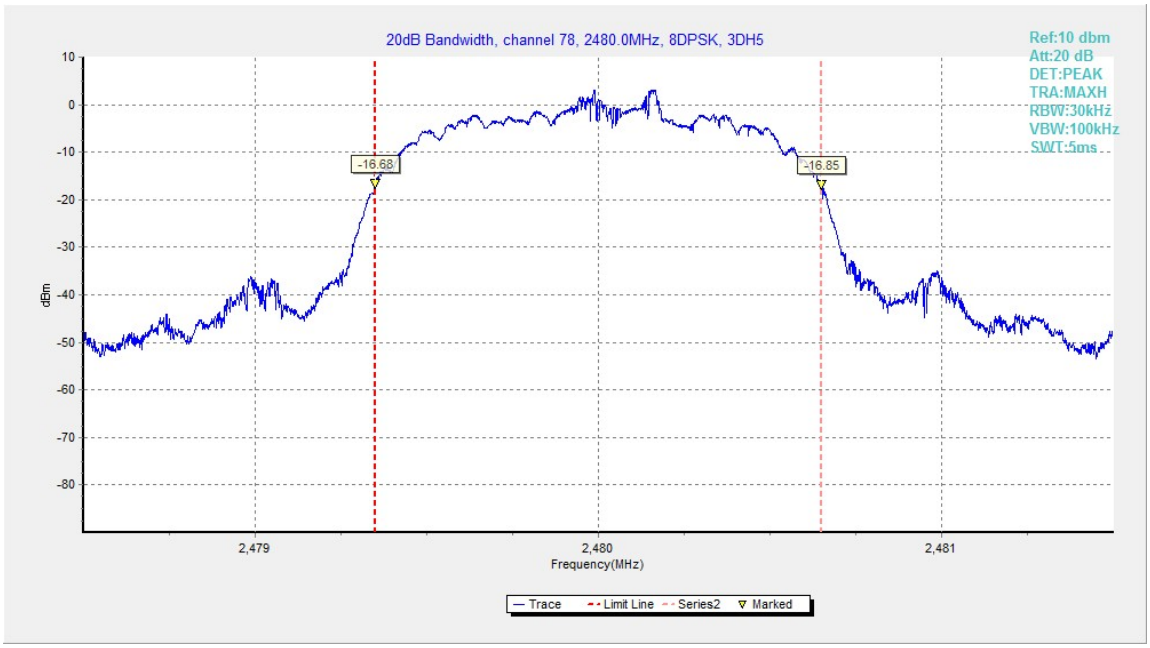


Fig.106. 20dB Bandwidth: 8DPSK, Channel 78

A.8. Carrier Frequency Separation

Method of Measurement: See ANSI C63.10-clause 7.8.2

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

- Span = 3MHz
- RBW=300kHz
- VBW=300kHz
- Sweep = auto
- Detector function = peak
- Trace = max hold
- Allow the trace to stabilize

Search the peak marks of the middle frequency and adjacent channel, then record the separation between them.

* Comment: This limit should be over 25 kHz or (2/3) * 20dB bandwidth, whichever is greater.

Measurement Limit:

Standard	Limit(kHz)
FCC 47 CFR Part 15.247(a)(1)	over 25 kHz or (2/3) * 20dB bandwidth

Measurement Result:

For GFSK

Channel	Carrier frequency separation (kHz)		Conclusion
39	Fig.107	1008.00	P

For π/4 DQPSK

Channel	Carrier frequency separation (kHz)		Conclusion
39	Fig.108	977.00	P

For 8DPSK

Channel	Carrier frequency separation (kHz)		Conclusion
39	Fig.109	1345.00	P

Conclusion: PASS

Test graphs as below:

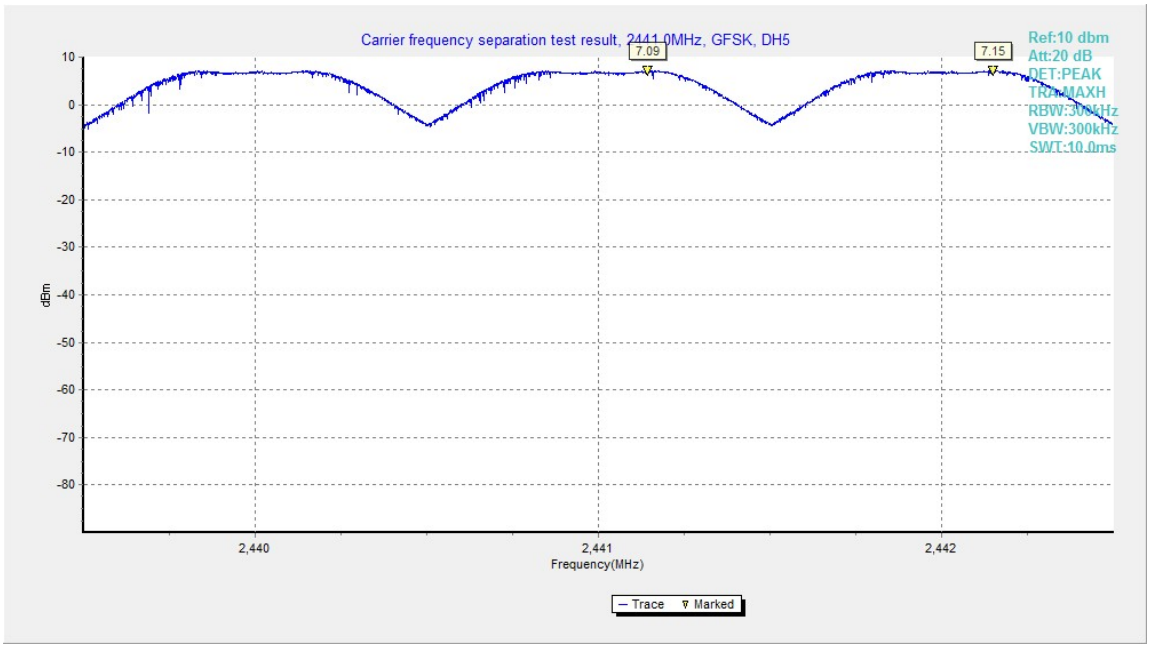


Fig.107. Carrier frequency separation measurement: GFSK, Channel 39

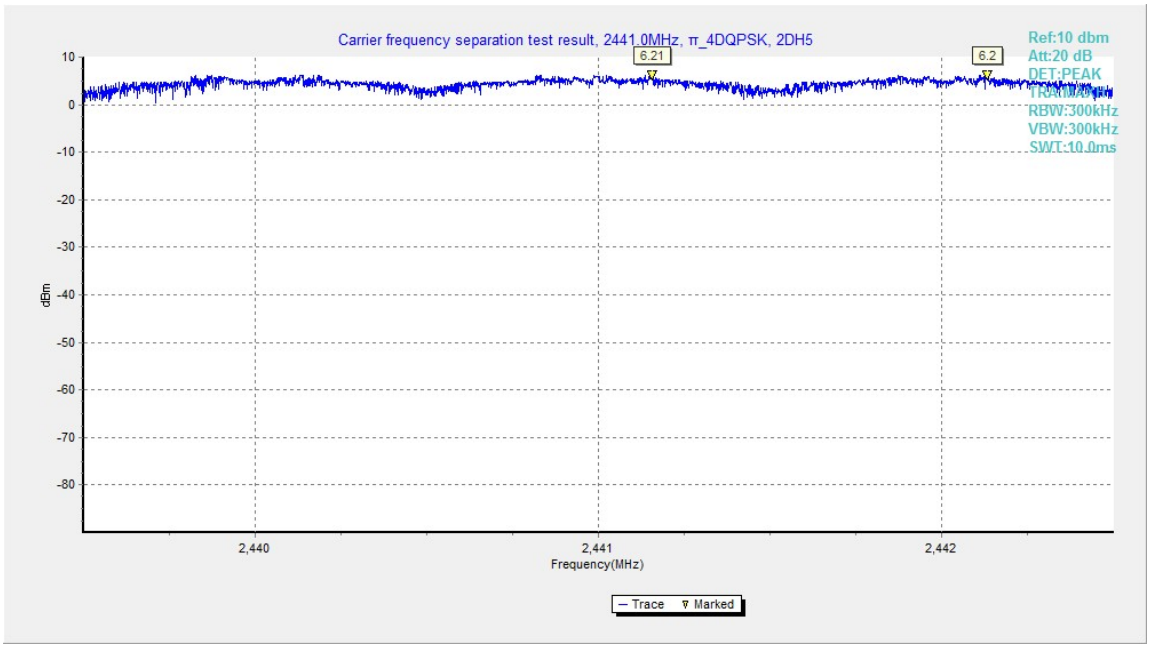


Fig.108. Carrier frequency separation measurement: π/4 DQPSK, Channel 39

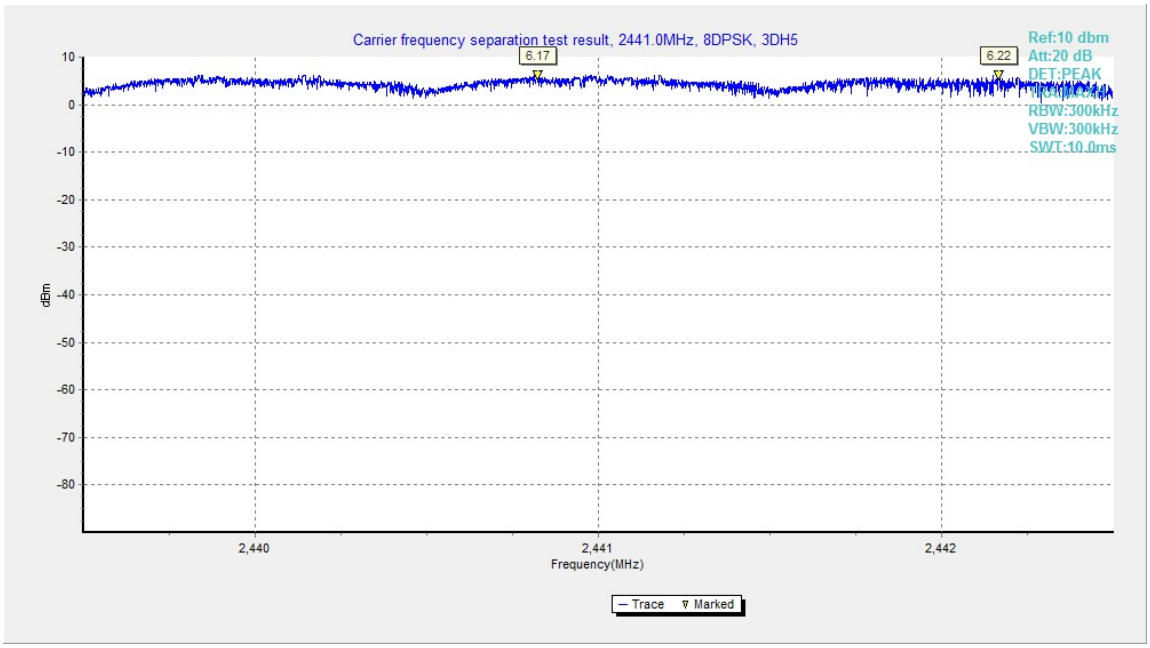


Fig.109. Carrier frequency separation measurement: 8DPSK, Channel 39

A.9. Number of Hopping Channels

Method of Measurement: See ANSI C63.10-clause 7.8.3

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

- Span = the frequency band of operation
- RBW = 500kHz
- VBW = 500kHz
- Sweep = auto
- Detector function = peak
- Trace = max hold
- Allow the trace to stabilize

It might prove necessary to break the span up into subranges to show clearly all of the hopping frequencies. Compliance of an EUT with the appropriate regulatory limit shall be determined for the number of hopping channels. A plot of the data shall be included in the test report.

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247(a) (1)(iii)	At least 15 non-overlapping channels

Measurement Result:

For GFSK

Channel	Number of hopping channels		Conclusion
0~39	Fig.110	79	P
40~78	Fig.111		

Forπ/4 DQPSK

Channel	Number of hopping channels		Conclusion
0~39	Fig.112	79	P
40~78	Fig.113		

For 8DPSK

Channel	Number of hopping channels		Conclusion
0~39	Fig.114	79	P
40~78	Fig.115		

Conclusion: PASS

Test graphs as below:

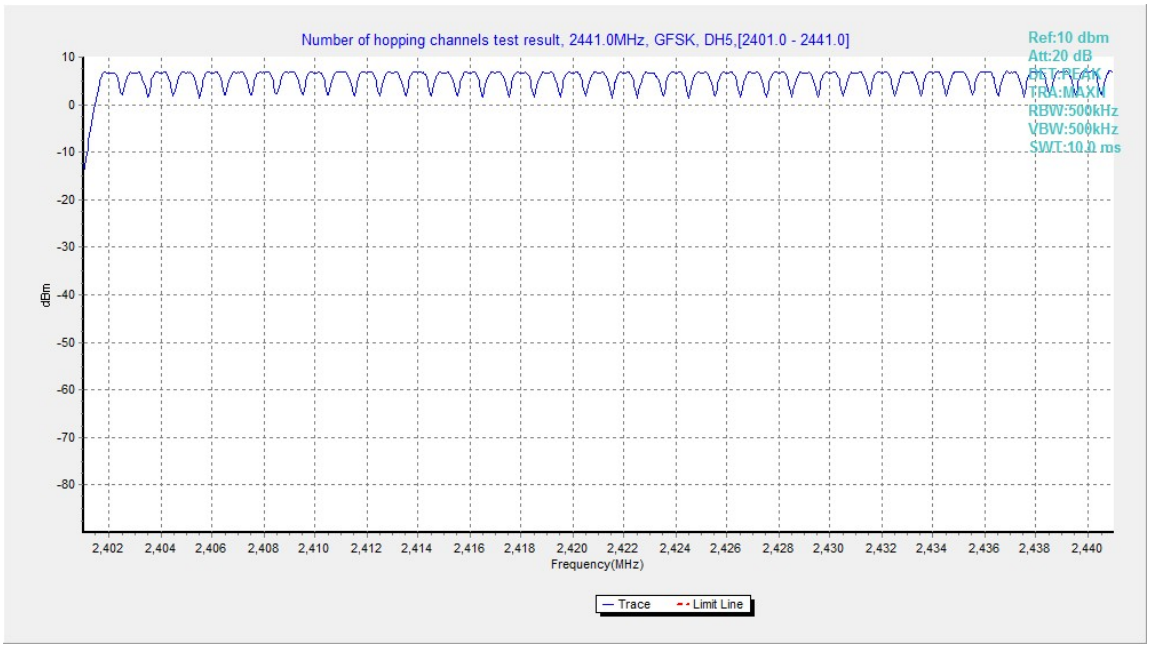


Fig.110. Number of hopping frequencies: GFSK, Channel 0 - 39

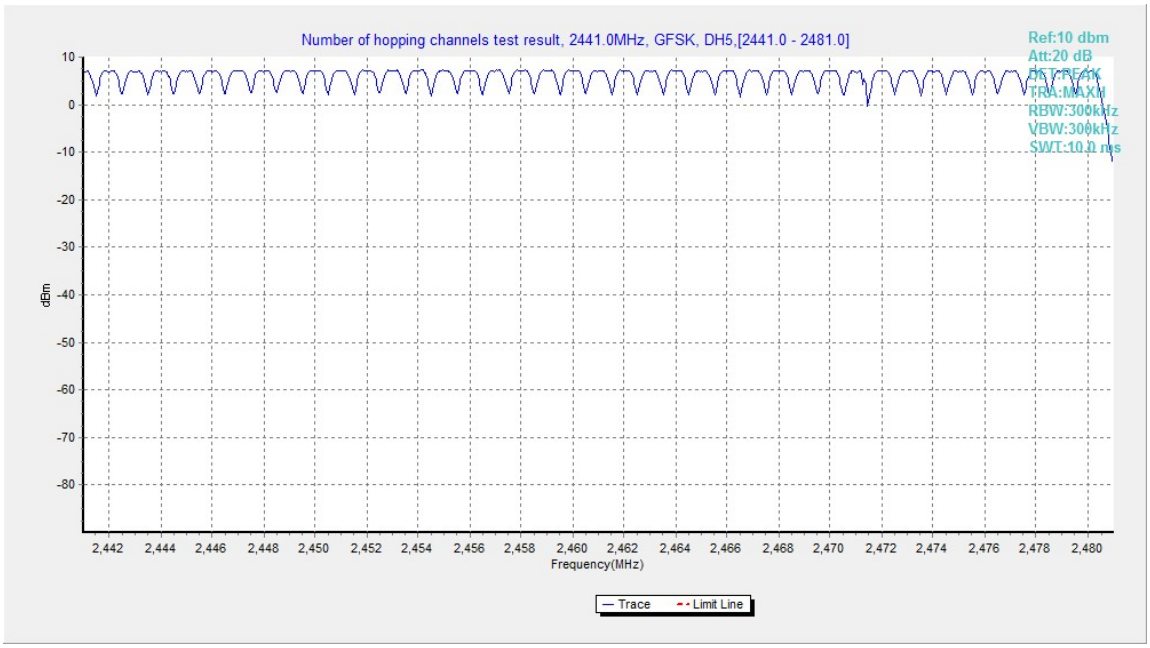


Fig.111. Number of hopping frequencies: GFSK, Channel 40 - 78

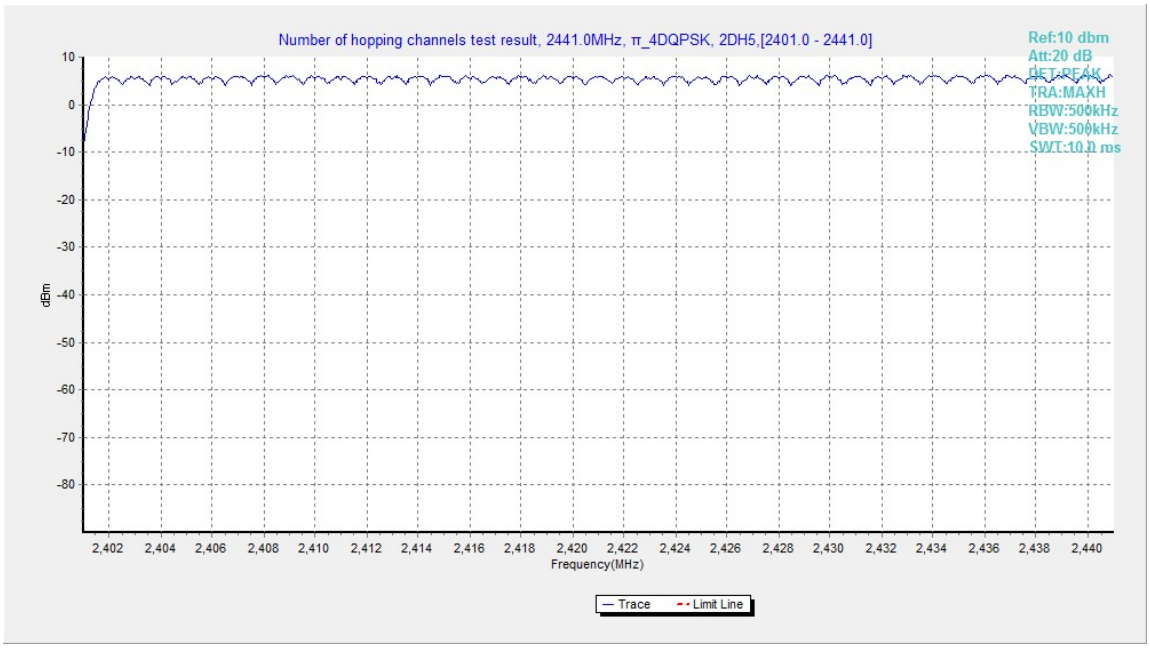


Fig.112. Number of hopping frequencies: π/4 DQPSK, Channel 0 - 39

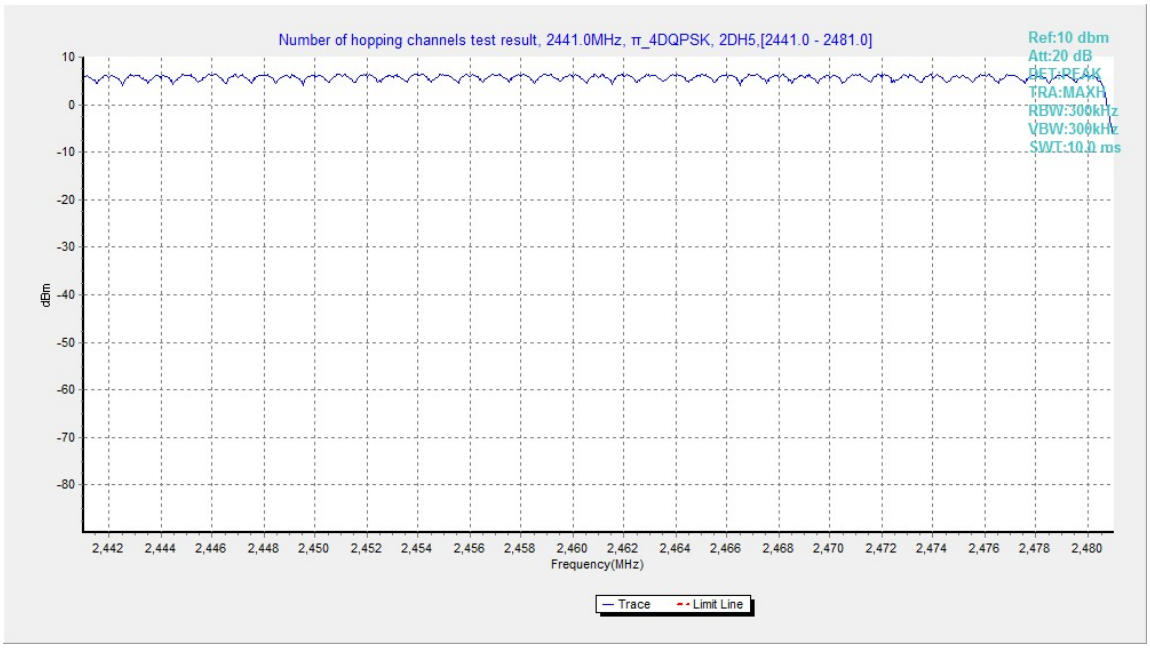


Fig.113. Number of hopping frequencies: π/4 DQPSK, Channel 40 - 78

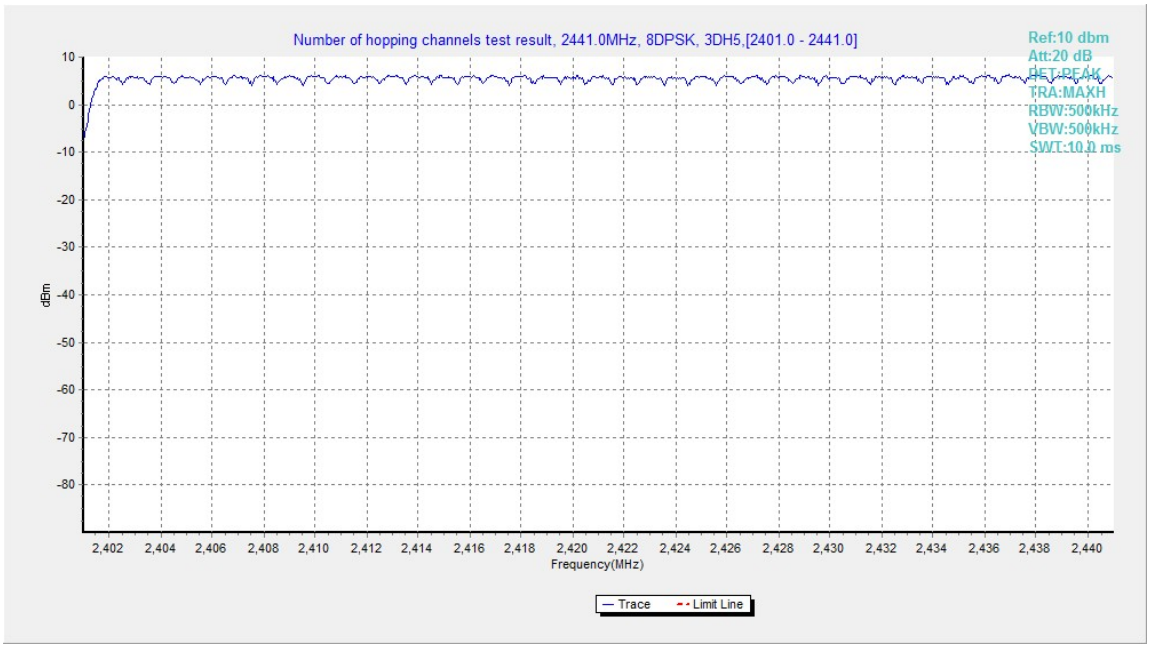


Fig.114. Number of hopping frequencies: 8DPSK, Channel 0 - 39

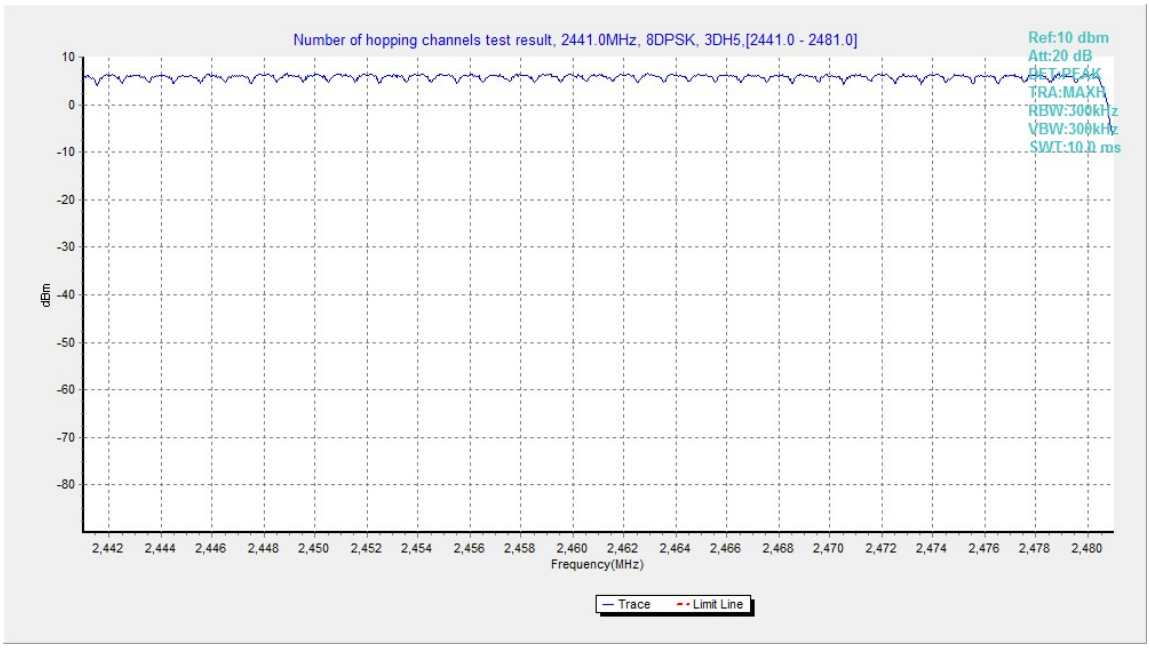


Fig.115. Number of hopping frequencies: 8DPSK, Channel 40 - 78

A.10. AC Powerline Conducted Emission

Method of Measurement: See ANSI C63.10-clause 6.2

1. the one EUT cable configuration and arrangement and mode of operation that produced the emission with the highest amplitude relative to the limit is selected for the final measurement, while applying the appropriate modulating signal to the EUT.
2. If the EUT is relocated from an exploratory test site to a final test site, the highest emissions shall be remaximized at the final test location before final ac power-line conducted emission measurements are performed.
3. The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment in the system) is then performed for the full frequency range for which the EUT is being tested for compliance without further variation of the EUT arrangement, cable positions, or EUT mode of operation.
4. If the EUT is comprised of equipment units that have their own separate ac power connections, e.g., floor-standing equipment with independent power cords for each shelf that are able to connect directly to the ac power network, each current-carrying conductor of one unit is measured while the other units are connected to a second (or more) LISN(s). All units shall be separately measured. If a power strip is provided by the manufacturer, to supply all of the units making up the EUT, only the conductors in the power cord of the power strip shall be measured.
5. If the EUT uses a detachable antenna, these measurements shall be made with a suitable dummy load connected to the antenna output terminals; otherwise, the tests shall be made with the antenna connected and, if adjustable, fully extended. When measuring the ac conducted emissions from a device that operates between 150 kHz and 30 MHz a non-detachable antenna may be replaced with a dummy load for the measurements within the fundamental emission band of the transmitter, but only for those measurements.36 Record the six highest EUT emissions relative to the limit of each of the current-carrying conductors of the power cords of the equipment that comprises the EUT over the frequency range specified by the procuring or regulatory agency. Diagram or photograph the test setup that was used. See Clause 8 for full reporting requirements.

Test Condition

Voltage（V）	Frequency（Hz）
120	60

Measurement Result and limit:

Bluetooth (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Conclusion
0.15 to 0.5	66 to 56	P
0.5 to 5	56	
5 to 30	60	
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.		

Bluetooth (Average Limit)

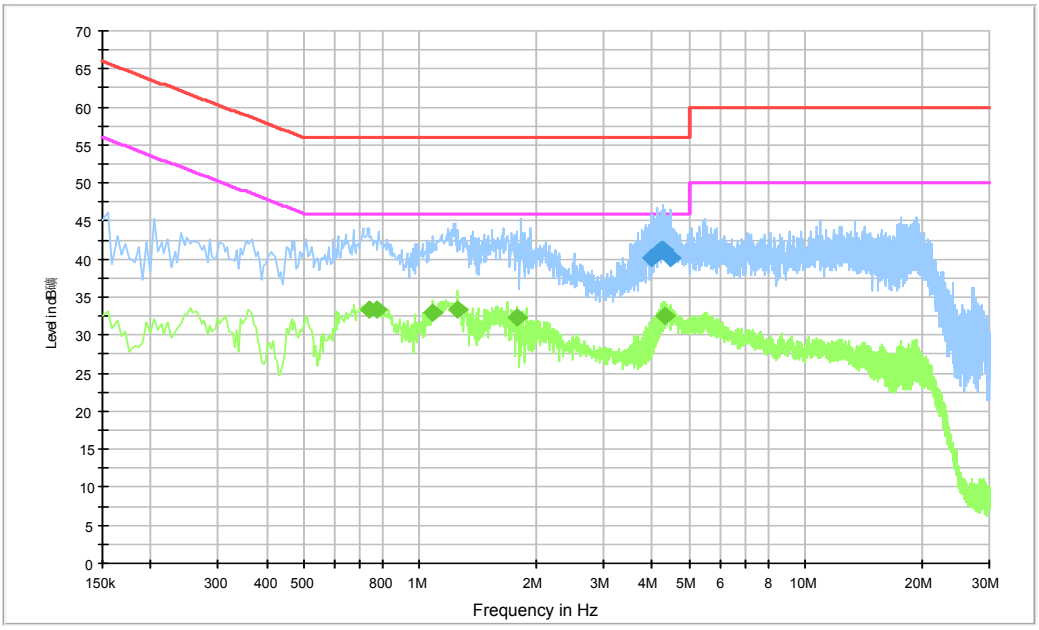
Frequency range (MHz)	Average Limit (dBμV)	Conclusion
0.15 to 0.5	56 to 46	P
0.5 to 5	46	
5 to 30	50	
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.		

The measurement is made according to ANSI C63.10

Conclusion: PASS

Test graphs as below:

Traffic:



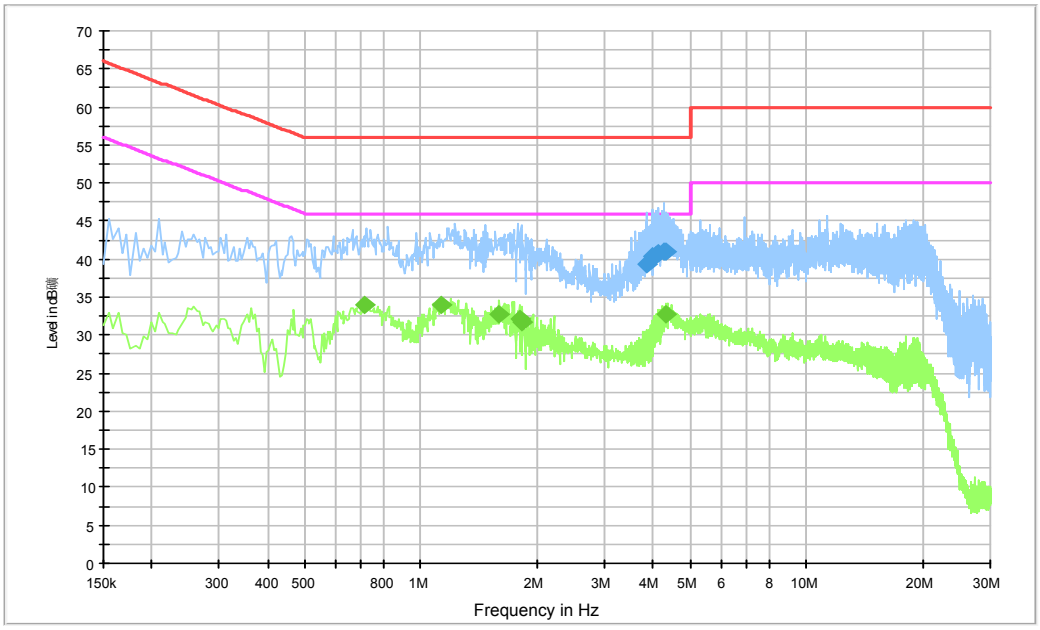
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
4.002000	40.2	GND	L1	10.4	15.8	56.0
4.128000	40.8	GND	L1	10.5	15.2	56.0
4.227000	41.2	GND	L1	10.5	14.8	56.0
4.263000	41.2	GND	L1	10.5	14.8	56.0
4.272000	41.1	GND	L1	10.5	14.9	56.0
4.461000	40.1	GND	L1	10.5	15.9	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.735000	33.3	GND	L1	10.3	12.7	46.0
0.775500	33.4	GND	L1	10.3	12.6	46.0
1.081500	32.9	GND	L1	10.3	13.1	46.0
1.252500	33.3	GND	L1	10.3	12.7	46.0
1.783500	32.2	GND	L1	10.4	13.8	46.0
4.303500	32.6	GND	L1	10.5	13.4	46.0

Idle:



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
3.858000	39.2	GND	L1	10.4	16.8	56.0
3.984000	40.3	GND	L1	10.4	15.7	56.0
4.069500	40.5	GND	L1	10.5	15.5	56.0
4.132500	40.9	GND	L1	10.5	15.1	56.0
4.285500	41.0	GND	L1	10.5	15.0	56.0
4.326000	41.0	GND	L1	10.5	15.0	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.712500	33.9	GND	L1	10.3	12.1	46.0
1.126500	33.9	GND	L1	10.3	12.1	46.0
1.599000	32.8	GND	L1	10.3	13.2	46.0
1.797000	32.1	GND	L1	10.4	13.9	46.0
1.837500	31.7	GND	L1	10.4	14.3	46.0
4.344000	32.7	GND	L1	10.5	13.3	46.0

*****END OF REPORT*****